WA-01-2020

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STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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October 21, 1992

TO: Phil KauzLoric
Water Quality Program

FROM: Betsy Dickes Betsy
Watershed Assessments Section

SUBJECT: Johnson Creek, Whatcom County, Washington

As you requested, water quality samples were taken in the Johnson Creek Watershed in February and March, 1992, as an addendum to the Dakota, Bertrand, and Fishtrap Creek monitoring project (Dickes 1992). Four sampling sites (Figure 1) were selected based on my previous water quality study (Dickes 1990). Sampling and analytical methods were the same as those used for Dakota , Bertrand, and Fishtrap Creeks (Dickes 1992). Data collected in the Johnson Creek Watershed can be found in Table 1.

Water quality did not fully meet Class A standards (WAC 173-201) at any of the monitoring locations. As seen in Figure 2, all sites had a geometric mean (GM) for fecal coliform bacteria (FC) which exceeded the Class A standard of 100 cfu/100 mL. Dissolved oxygen (D.O.) also tended to be below the 8.0 mg/L standard, except at site UC in Sumas Creek (Table 1). The worst water quality was seen in the Clearbrook Road ditch, site CB. This site had the lowest D.O. (mean=1.9 mg/L) and the highest FC (GM=1000 cfu/100 mL). Ammonia concentrations were also elevated in the ditch; on March 3, ammonia concentrations equaled the chronic 4-day ammonia criterion.

Land use in the Johnson Creek Watershed is dominated by agriculture, specifically dairy farming. Impacts from dairy wastes would explain the elevated FC and depressed oxygen documented in this abbreviated study. However, effects from other livestock farms and failing septic systems are other possible sources.

Dairy waste entering surface waters and degrading water quality has been a historical problem in the Johnson Creek Watershed (Gillies, *et al.* 1981; Overdorff 1981; Dickes 1990). The Whatcom County Conservation District and Soil Conservation Service have been working hard to improve water quality in the watershed. Continued efforts to identify sources of pollutants are warranted. In particular, source identification followed by remediation should be a priority in the Clearbrook Road ditch, as this drainage has been a persistent water quality problem.

If you have any questions regarding this abbreviated survey, please call me at 586-8168.

BD:blt

cc: Dick Wallace Will Kendra John Glynn Bob Booth
John Gillies

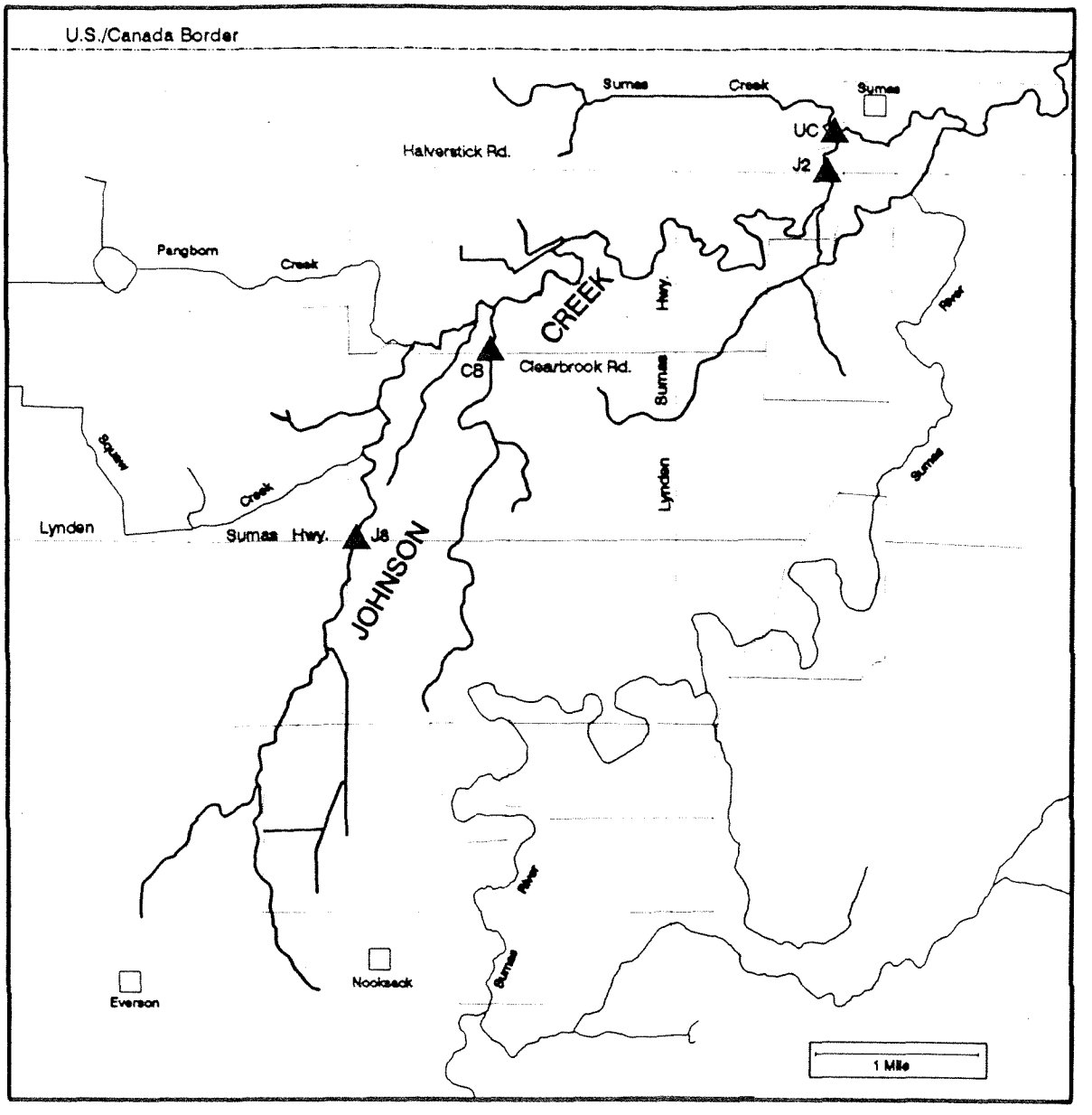

Figure 1. Sampling site locations in the Johnson Creek Watershed, February - March 1992.

Table 1. Summary of data collected in the Johnson Creek Watershed during February - March, 1992.

Date	Site#	Site Location	Time	Temp (°C)	pH (S.U.)	Cond (μmhos/cm)	D.O. (mg/L)	D.O. (%sat)	FC (cfu/100mL)	NO3+NO2- (mg/L)	NH3-N (mg/L)	
02/04/92	J2	Johnson Crk on Halverstick Rd	1405	8.6	7.12	200	7.7	66	100	4.79	0.067	
03/03/92	J2	Johnson Crk on Halverstick Rd	1350	10.0	7.16	229	7.4	66	83	4.66	0.051	
03/10/92	J2	Johnson Crk on Halverstick Rd	1200	9.5	6.82	230	8.4	74	120	4.95	0.047	
03/17/92	J2	Johnson Crk on Halverstick Rd	1145	10.8	6.75	220	7.8	70	470	4.73	0.112	
02/04/92	J8	Johnson Crk on E. Badger Rd	1335	8.6	6.95	260	6.0	51	80	6.29	0.162	
03/03/92	J8	Johnson Crk on E. Badger Rd	1320	9.3	6.98	300	6.2	54	26	5.23	0.128	
03/10/92	J8	Johnson Crk on E. Badger Rd	1125	9.5	6.86	310	7.0	61	180	4.93	0.157	
03/17/92	J8	Johnson Crk on E. Badger Rd	1115	11.3	6.61	310	6.3	58	400	3.78	0.148	
02/04/92	UC	Sumas Crk at confluence with Johnson Crk	1415	8.6	7.07	191	8.1	69	530	4.34	0.690	
03/03/92	UC	Sumas Crk at confluence with Johnson Crk	1400	9.2	7.18	205	8.9	77	77 S	5.35	0.092	
03/10/92	UC	Sumas Crk at confluence with Johnson Crk	1210	9.3	7.05	190	9.8	85	220	5.73	0.058	
03/17/92	UC	Sumas Crk at confluence with Johnson Crk	1215	10.4	6.84	210	9.3	83	120	ND	0.129	
03/17/92	U R	Sumas Crk at confluence with Johnson Crk	1230	10.5	6.71	210	9.3	83	190	5.43	0.119	
02/04/92	CB	Clearbrook ditch, W. of Nooksack Rd	1350	9.3	6.84	307	2.3	20	370	4.48	0.857	
03/03/92	CB	Clearbrook ditch, W. of Nooksack Rd	1335	9.7	6.90	339	1.6	14	1400	0.116	2.76	*C
03/10/92	CB	Clearbrook ditch, W. of Nooksack Rd	1145	10.1	6.60	313	1.6	14	650 S	0.457	1.05	
03/17/92	CB	Clearbrook ditch, W. of Nooksack Rd	1135	11.0	6.59	320	2.2	20	3500 J	0.374	1.10	

S-Spreader; estimate due to masking by other bacteria

ND- No data; laboratory error

R-Replicate sample

J-value estimated

*C-equals chronic 4-day ammonia criterion

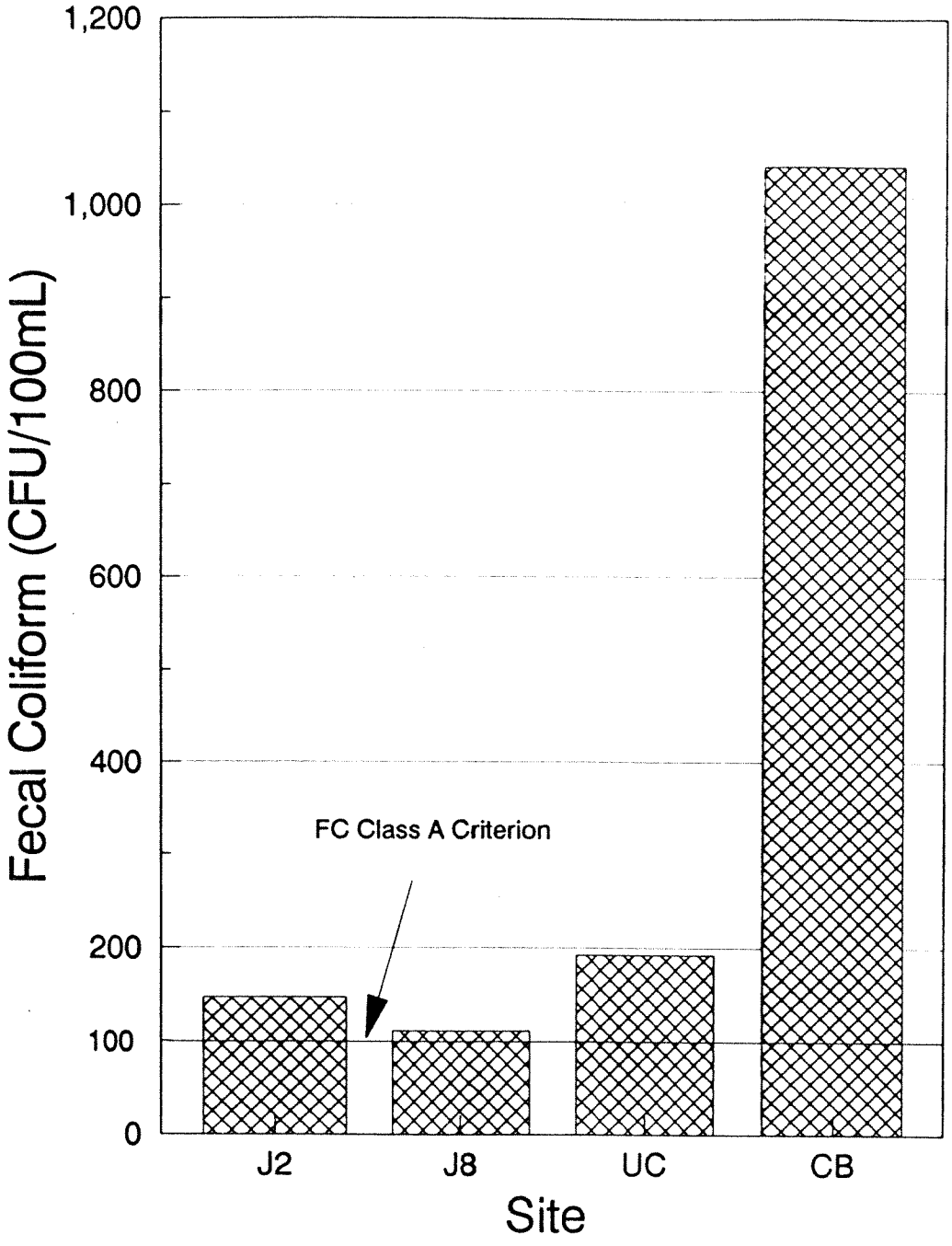

Figure 2. Fecal coliform (FC) geometric means at sampling sites in the Johnson Creek Watershed, February - March 1992.

REFERENCES

Dickes, B., 1990. Water Quality in the Johnson Creek Watershed after the Implementation of Best Management Practices. Department of Ecology, Olympia, WA.

------, 1992. Water Quality Screening in the Dakota, Bertrand, and Fishtrap Watersheds, Whatcom County, WA. Department of Ecology, Olympia, WA. (report in preparation).

Gillies, J.A., P.A.Olds, W.M. Lee, P.A. Taylor, G.L. Edmonds and S.L. Lines, 1981. Final Watershed Plan: Johnson Creek Watershed, Whatcom County, WA. Whatcom County Conservation Service, Soil Conservation Service, Lynden, WA.

Overdorff, D.L., 1981. Water Quality Monitoring and Evaluation Program, Johnson Creek Watershed, Whatcom County, WA. USDA Soil Conservation Service, Spokane, WA.

Washington Administrative Code (WAC) Chapter 173-201. Water quality standards for surface waters of the state of Washington. 1988.